



State of Utah

DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF ENVIRONMENTAL RESPONSE AND REMEDIATION

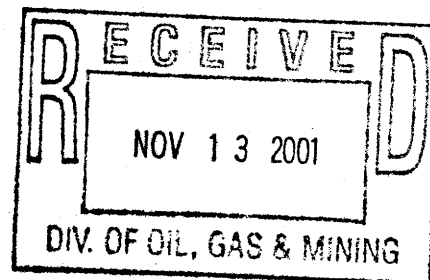
Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
Kent P. Gray
Director

168 North 1950 West
P.O. Box 144840
Salt Lake City, Utah 84114-4840
(801) 536-4100
(801) 359-8853 Fax
(801) 536-4414 T.D.D.
www.deq.state.ut.us Web

ERRC-302-01

November 7, 2001

Mr. Jon Cherry
Kennecott Utah Copper Corporation
8315 West 3595 South
P.O. Box 6001
Magna, Utah 84044-6001



RE: Kennecott Utah Copper Corporation's Draft Sub-Work Plans for Specific Studies Identified in the KUCC South Facilities Ground Water Remedial Design Work Plan (RDWP)

Dear Mr. Cherry:

The Division of Environmental Response and Remediation (DERR) has completed a review of the Remedial Design Sub-Work Plans (SWPs), (1) Baseline Groundwater Study Monitoring Plan for the Kennecott South Facilities Groundwater Remedial Design, (2) South Facilities Groundwater Modeling Studies Work Plan, and (3) South Facilities Groundwater Remedial Design Work Plan for Geochemical Investigations: Tailings Disposal System. Please find enclosed comments developed during our review of the referenced documents.

The DERR appreciates the opportunity to comment on these SWPs. If you have any questions, feel free to contact me at (801) 536-4282.

Sincerely,

Douglas C. Bacon, Environmental Scientist
Division of Environmental Response and Remediation

DCB/klv

Enclosure(s)

cc: Dr. Eva Hoffman, U. S. Environmental Protection Agency, Region VIII
Daniel Hall, Division of Water Quality
Tom Munson, Utah Department of Natural Resources, Division of Oil, Gas, and Mining
Patti Pavey M.S., Deputy Director, Salt Lake Valley Health Department.

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The DERR Comments on the KUCC South Facilities Remedial Design Sub-Work Plans (SWPs)

Specific Comments on the Baseline Ground Water Study Monitoring Plan –

(1) Page 2, Section 2.0 *Purpose*, Item #2: Monitoring requirements should also assure compliance with the expectations of the Natural Resource Damage Consent Decree. Monitoring, as required under permit, should assure that treated water meets both the State of Utah Primary and Secondary Drinking Water Standards (also implied by bullets #4, and #5 on page 3 of the EPA Record of Decision). Monitoring should also assure that containment is reached at the proposed pumping rates and that the sulfate/acid plume in Zone A is prevented from migrating off KUCC property. Monitoring, as required by permit, should assure that any and all surface water discharges from the treatment facilities meet the UPDES standard set for these discharges. Please revise the text.

(2) Page 3, Section 2.0 *Purpose*, Item #4: Determination of monitoring frequency should not be based on how well model calibration is achieved in a given location. The referenced section states that "Areas closely simulated by the model can have less frequent monitoring in the long term monitoring plan and areas that are poorly predicted should be monitored on a more frequent basis." The KUCC model has been calibrated, not validated. Therefore its effectiveness as a predictive tool is not proven and should not be the sole criteria for determining monitoring frequency.

(3) Page 5, Subsection 4.1.2 *Frequency*, 4th sentence: Seasonal fluctuations in the water table not only occur because of the effects of seasonal pumping, but also include effects caused by variable precipitation rates. The DERR suggests that the inclusion of four sample sets collected over a yearly basis would be far more effective to model the seasonal fluctuation caused by variable precipitation rates. This modeling would assist in determining the effects of the extraction program upon the water level in the aquifer.

(4) Page 4, Subsection 4.1.1, Page 8 Subsection 4.2.1, 2nd paragraph: If the water quality information gathered from the Trans Jordan Solid Waste Disposal Facility is planned to augment the data collected by KUCC and is to be used to make remedial decisions, then the DERR suggests that KUCC strives to verify the quality of the data set from this facility. If the area is determined to be a critical monitoring location, then DEQ recommends KUCC take over the monitoring so that the data is useable for the baseline study.

(5) Page 8, Subsection 4.2.2 *Analytical Suite*, 1st paragraph, 5th sentence: It should be noted that sulfate and TDS are indicators of acid mine drainage that could indicate areas potentially impacted by metals contamination.

(6) Page 9, Table 2 *Analytical Suite for Baseline Ground Water Samples*: Please note for each of the analytes if there is a ground water or drinking water standard.

(7) Page 11, 4.2.4 *Monitoring Locations*, 1st paragraph, 5th sentence: Monitoring around well #LTG1139 should take place to determine how pumping of this well will affect the containment of the plume in Zone A. Please revise the text.

Please note that if supplemental water (from well #LTG1139) is brought into the treatment system for plume treatment, KUCC may not be able to apply for a full rebate of the trust fund money. The rebate will be based upon many factors, one being the source of water supplied by KUCC prior to treatment.

Specific Comments on the Draft South Facilities Ground Water Modeling Studies Work Plan –

(1) Page 3, *Current KUC Model*, 2nd paragraph 3rd sentence, and Figure 2.0: The proposed sub-regional model does not include the area from Butterfield Canyon to Riverton, encompassing the Cities of Herriman and Riverton. This area should be included in the monitoring network so that expected draw down impacts can be delineated, especially in light of the increasing demands Riverton places on the aquifer.

Specific Comments on the Draft South Facilities Groundwater Remedial Design Work Plan for Geochemical Investigations: Tailings Disposal System –

(1) Page 5, Section 3.0; Page 6, Section 4.0, Bullet #5; and Page 12, Section 4.3: Please explain in detail what the three proposed modeling methods, STELLA, Monte Carlo, MIN3P will provide in terms of informational output.

(2) Page 6, Section 4.0 *Sampling and Analysis Plan for Hydrogeochemical Studies*, Bullet #1: The characterization of source fluids should also include the other various mine dewatering flows, which may be directed into the tailings line in the future. This may include water from dewatering the pit, water extracted from the Dry Fork plume, and water collected from Kessler Springs and the Garfield well.

(3) Page 6, Section 4.0 *Sampling and Analysis Plan for Hydrogeochemical Studies*, Bullet #3: Please explain what is meant by the term "pipeline reactor."

(4) Page 9, Section 4.2 *Chemical and Mineralogical Studies*. Section 4.2 states that the Remedial Design Work Plan needs to address four, related questions. The questions do not include any mention of the possible effects plume water may have on the ability of the tailings impoundment decant water to meet the UPDES permit requirements. Please address.

(5) Page 11, Section 4.2.2 *Dynamic Testing in Tailing Pipeline*, 2nd paragraph, 1st sentence: The reference of a "standard charge of Li" is vague, please elaborate on the reference. Please provide the amount of "Li" that will be added to the system.

(6) Page 13, Section 4.4 *Geochemical Evolution of Tailing in the Impoundment*, 2nd paragraph, 1st sentence: Please describe the location of the two testing cells. Please explain if the tailings mixture that will be placed in both testing cells will include or be able to approximate the effect that ground water treatment concentrates will introduce. Please determine if there is a need for the two testing cells to be permitted by either the Division of Water Quality, Solid and Hazardous Waste, and/or Oil, Gas and Mining. Please provide the procedures that will be undertaken to reclaim the area where the testing cells are located. Please explain how the cells

will be managed for the water content within the tailings mixture. Please elaborate upon how the cells will be constructed to prevent seepage to either the localized ground water table or nearby surface water bodies.

(7) Page 17, Table 1.0 Aqueous-Phase Chemistry - Target Detection Limits From Kennecott: Please explain why KUCC is sampling for strontium, silica, fluorine, ortho-phosphate, and total nitrate/nitrite. Please explain if one of these substances impacts the neutralization potential of the tailings line and how the substance interacts with the tailings.

(8) Page 18, Table 2.0 Solid Phase Chemistry – Method Detection Limits: Please verify that the method detection limits are less than the maximum contaminant level discharge limitations for the substances listed. Please explain why the samples will be analyzed for strontium, and explain the substance's interaction on the tailings.